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Distribution and Price of the 1936-37 Florida Citrus Crop

BY DOYAL E. TIMMONS
EXTENSION ECONOMIST IN MARKETING

Introduction

A better understanding of the distribution and price of the 1936-37 citrus crop can be had if past production and price trends are reviewed.

Production of citrus fruit in the United States has increased almost constantly since the freeze in Florida in 1895.*

Citrus prices have not followed as constant a trend as production. Before the 1927-28 season citrus prices fluctuated considerably from season to season but followed no definite trend. Since then prices have tended downward. Prices paid by canners have followed the same general trend as the New York auction price.**

Orange production, though fluctating from year to year, has increased from a United States production of about six million boxes in 1900 to sixty-five million boxes in 1934-35. California's production decreased considerably during the last two seasons. Florida's production increased during the last two seasons, but California's decrease was so great that the total orange production during the last two seasons was not as high as in 1934-35. The total United States production of oranges in 1936-37 is estimated at fifty-one million boxes.

Grapefruit production was relatively unimportant as compared with oranges until about 1927. Since 1927 there has been a rapid increase in grapefruit production. The total United States production during the seasons 1922-23 to 1927-28 was less than ten million boxes. Last season's production amounted to almost thirty-one million boxes. At one time Florida produced about eighty-five per cent of United States grapefruit. Since 1930 Florida has produced a smaller and smaller per cent amounting to only sixty-one per cent of the total United States production for the last season.

Distribution of Florida Citrus

Oranges — Approximately thirty-six per cent of the 1936-37 Florida orange crop was marketed in the State of New York. Seventy-five per cent was marketed in the six states of New York, Pennsylvania, Massachusetts, Ohio, Illinois, and Maryland. From seventy-two to seventy-eight per cent of the crop has been marketed in these states for the last six seasons.

Grapefruit — Thirty-eight per cent of Florida's grapefruit went to New York state last season and seventy-two per cent to the five states of New York, Pennsylvania, Massachusetts, Ohio and Illinois. A larger and larger proportion of Florida's seems to have been going to the first three named states. Ohio has about held its own while Illinois receipts have been proportionately less.

Tangerines — Thirty-six per cent of last season's tangerines went to New York and eighty-four per cent to the six states of New York, Pennsylvania, Ohio, Illinois, Massachusetts and Michigan. Approximately this same proportion of Florida tangerines has been going to these states during the last five seasons.

Motor Truck Movement of Citrus

Approximately fourteen per cent of all citrus entering into interstate commerce from Florida during the 1936-37 season was hauled by truck. Orange shipments by truck amount to seventeen per cent, tangerines to fifteen per cent and grapefruit to twelve per cent of the total interstate movement. A larger quantity was trucked to Georgia than

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*For more detailed information on marketing and distribution refer to the tables and charts herewith.

**Cannery prices used are those furnished by the Florida Grapefruit Canners' Association and are F. O. B. roadside prices.

IMPRESSIONS

..By..
Frank Kay Anderson

The height of something or other in bargaining. Ernest Youngblood, representing Heller Bros. of New York negotiating with Emil Karst of Rose Caretakers Assn., Orlando, concerning a big block of early fruit.

The Labor Nonpartisan League announces a drive for farmer-members. John L. Lewis is the head of the league. Wonder how many farmers they'll get?

Many have tried to define Pennsylvania Avenue in the national capital. A recent, and pungent, definition comes from Eldredge Clapp of Hiawassee Groves, who claims that, "Pennsylvania Avenue is a straight line connecting an absolute vacuum with an inert ingredient."

Sounds as if its breeding record was: Out of Frustration by Sour Grapes. But pungent never the less.

Fancy-seeing-you-here note: The Henry Pringles of Leesburg and the Arthur Fullers of Altamonte Springs running across each other wholly unexpectedly in Denver recently.

A long ride across Polk County, and seldom groves seen in healthier, thriftier condition. A beautiful sight. Quite a change from just a few years back, during what might be called the Short Cut Era, when growers were trying to see just how much sawdust the horse could stand in his feedbox, so to speak. An era in which it was preached that whatever had previously been considered orthodox in fertilizer formulae and cultivation methods was necessarily wrong. A preachment which found many followers because of the rather dire financial straits of the growers, and the human frailty of believing that which one wants to believe. Fortunately there came a turn-around before groves were absolutely ruined. Now their bettered condition is cause for reflection upon the circumstances.

And, riding along alone, came the wonderment if these United States of America as a whole have not recently been in the throes of a Short Cut Era as affecting otherwise normal economic policies, with a pondering upon when the turn-around may be expected.

Two drunks riding in the smoking room of a Pullman, an occasional surreptititous nip at the bottle preserving their alcholic statue. Two employees of the AAA enter and sit down to discussion, in the course of which surplus wheat, surplus oats and a lot of other surpluses were mentioned freely. Suddenly one of the drunks furnished an interruption. Turning to his inebriated companion, he loudly demanded:

"What these guys talkin' about?"

"Surpluses."

"Wha's a surplus?"

"Don' you know? I-I-I do. I had a calf had trouble with a surplus once."

"Calf had trouble with a surplus?"

"Sh-s--sure, a teat too big too get in his mouth."

Back when the annual pack of canned grapefruit was around two million cases Paul Stanton of Frostproof said he could see no reason why it should not gradually increase until it reached approximately the same figure as the annual pack of canned pineapple, then around ten million cases. With last season's pack of Florida canned grapefruit almost touching the seven million case mark, and Texas now getting into the game, it looks as if Mrs. Stanton's husband was about right in the first place.

The Ambassador to Germany, the same Mr. Dodd who cabled of the American billionaire's plot to become fascist dictator of the U. S., on the radio telling how to rescue this republic of ours. To stop the further drift of people to the cities, and to turn them back toward the country, in his opinion, one principal objective. Then implication of the necessity for the Black Bill, the maximum hour provisions of which, in actual working, cannot fail to further divert business from outlying plants into the cities. Bill Nye was right in claiming that the only consistent thing in the animal kingdom is a mule.

The same Mr. Dodd deploring how little the farmers' share of the ultimate dollar for farm products sold in the cities. Wonder if ever he heard of the time-honored merchandising formula upon manufactured goods—to add fifty per cent to manufacturing costs and then double it, to produce the manufacturer's selling price, in order to come out alive.

The same figures cited by some to show how small a part of the ultimate dollar comes to U. S. citrus growers show, in actuality, that they average higher in that respect than do some manufacturers. Who was it said something about the trouble which results from one-half the world not knowing how the other half lives?

Ambassador Dodd, too, quite sure of the great benefits from the tariff reductions resulting from those things called Reciprocal Trade Agreements. But he didn't explain how our people who are being put out of business, our own vegetable growers in Florida for instance, by low priced foreign products of starvation wages, are going to benefit either in the short run or the long run. The refusal of radio politicians to be in any manner handicapped by facts is an increasingly noticeable development.

Howard Phillips' idea of selling Florida oranges by weight at retail appeals to him so much that the Dr. P. Phillips Co. this winter will try, through its merchandising department, to have it given a real tryout in some places.

That will be interesting to watch, for there is no doubt of the benefit to Florida orange growers must be considerable, if the idea can be put over.

The same Howard Phillips explaining his reluctance to participate real actively in some industry deliberations by setting forth the apparent homelessness of their organization, through the inclination of many growers to look upon them as shippers and the equal persistence of other shipping organizations to consider the Dr. P. Phillips Co. wholly as growers.

Personal nomination for the finest offices in the Florida citrus business, those of the Chester C. Fosgate Co. adjacent to the big Forest City packing house.

Trust the Hon. Jim Morton of Waverly, Auburndale and intermediate points to spill the beans right out when the time came. The which has reference to the timely nature of his little lecture upon the CIO as manifested in Florida, its leadership, personnel and its ideals as revealed by happenings.

Credit D. P. Sias, of Clarcona, Orlando, etc., etc., with this definition. A blotter is something that permits the ink to dry while you are looking for it.

Possibly prompted by a portion of our last month's lament, Mrs. Alben Stover of Maitland comes forward to say how much she and her husband appreciate these Impressions; and how they look forward each month to reading them. Our public again.

Of course, as the old lady said when she kissed the cow, there is no accounting for tastes. We recall the time when we were an inveterate reader of Mr Fox's Police Gazette.

Chester Fosgate and Billy Pem-

berton, salesmanager for the Fosgate Company, calling our attention to an editorial outburst on the subject of color-added fruit in a magazine called Modern Living published in New York, and edited by a Dr. M. D. Parrish, the same who is to be heard over the radio in certain health broadcasts. The good doctor doesn't like color-added, and says so with a lot of perhaps unnecessary vehemence.

Certainly Dr. Parrish by his outburst likely enough has alienated his circle of readers from color-added fruit. How big that circle of readers may be isn't certain. Our refernce book says of the magazine in question: "After three requests publisher has failed to furnish sworn circulation statement in accordance with S.R.D.S. requirements."

Herb Lyman, the Orlando irrepressible, now with Trueman Fertilizer Co. With Kenneth Murphy at Sanford and Herb at Orlando that gives Ray Trueman a strong team in that territory.

J. Fred Bazemore, he of the Chilean Nitrate of Soda Educational Bureau, is an example of the reformed railroad agricultural agent. Very few of them ever reform.

C. N. (Pinky) Williams of Winter Park just starting his northward swing around the markets in the middle of September, maybe in the hope of picking up some loose ends that some of the others overlooked.

A meeting with Joe Wynn of Tampa recently, the first time our orbits have coincided in several years. Time has dealt kindly with him. If possible, he is just a bit prettier than formerly, and seems fully grown up. At least he's a little too big for a man, and not quite big enough for a horse. He has one job we do not envy, that of traveling the country West of the Mississippi throughout the winter on behalf of the sales department of the Exchange.

It fell to our lot to direct, from safely within Florida's sunshine, the first sales detail crew ever to carry the message of Florida oranges and grapefruit to retailers over the North. It was an enthusiastic bunch which started out, later there was some evidence of bogging down. We gave 'em quite a dose of pep by telegraph; and they responded with a photograph of the whole crew out in snow about two feet deep and standing in front of a selected assortment of icicles. The saddest looking bunch of crackers ever we have seen photographed.

Sorry to learn that Charley Price still is missing from the line-up of the sales department of the Exchange at Tampa. Here's hoping his health will mend very shortly. He is our personal nomination for one of the most valuable men to Florida in connection with citrus selling.

J. S. Crutchfield roaming the streets of Orlando looking for R. B. Woolfolk, and a few minutes later the said R. B. Woolfolk looking for J. S. Crutchfield. After forty years of business association they haven't learned to keep track of one another for very long at a time. But either one will bet you a cigar that the other will not be at a given place at a given time.

S. Lloyd Frisbie of this publication and Grady Bruce of Bartow travel about so much together that they are beginning to look alike.

'N if you doubt that this writer possesses both moral and physical courage above the average, just consider carefully the preceding paragraph.

If the inspired linotyper doesn't spoil that paragraph, we may be hiding out all next month. Both of 'em are bigger than we are, and it's an open question which will feel worse insulted.

Better writers than we have gone into permanent retirement through an untimely relation of the truth.

Our wife being out of the state, our house has been closed except for our son and ourself sleeping there of nights. For the past three days we have had the conviction there was something wrong. This morning we counted noses to make sure of the attendance, for it seemed reasonably certain someone or something was dead in the house. Not only dead, but fully ripe. Mellow, so to speak. Then we discovered it was a sack of guavas we had picked, and had forgotten to deliver to a neighbor.

Chas. E. Bradshaw, the Atlanta insurance tycoon who now has 500 acres of grove in the Forest City-Altamonte Springs section, and is going along toward a thousand acres, it is said, now moving his family into the big home he has built on Spring Lake and becoming a full fledged Floridian.

Which reminds that Judge W. K. Whitfield of Orlando, himself a former big insurance figure in the North,

(Continued on page 15)

IT'S TIME
to think about
FROST PROTECTION

Winter is close at hand. And with falling temperatures comes the threat of frost. A menace to fruit, trees, vegetables and vines that last year cost growers in the United States many millions of dollars. That, in some cases, wiped out overnight the efforts of years.

With modern heating equipment of tested efficiency available, there is no need to gamble with frost. An investment in HY-LO or CANCO heaters means protection against frost damage for years to come. Manufactured by the American Can Company, HY-LO and CANCO heaters have been thoroughly tested in actual operation. They are safe, dependable and durable — the acknowledged standard wherever heaters are used.

Plan now to give your grove or farm the security against loss by frost or freeze that these heaters provide. Be prepared for frost this year.

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This large CANCO cone type heater is exceptionally efficient and has given excellent service under all frost conditions in protecting citrus groves and ferneries. The round seamless bowl is made of 24-gauge black iron galvanized by the hot-dipped process and is definitely resistant to rust and high temperature.

Equipped with Dunn down draft tube for fast lighting. Oil consumption can be readily controlled with rust-proof hinged regulator.

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THE GULF FERTILIZER CO. • TAMPA

A Research Program With Dolomitic Limestone

BY O. C. BRYAN*

The beneficial effects obtained from the use of Dolomite on citrus and other Florida crops have been rather pronounced in places. Moreover, similar results have been secured on many of the coastal plain soils from Florida to Maine. So general have been these beneficial results that magnesium and calcium are rapidly becoming major elements in our soil fertility program. This is one of the main reasons for a neutral fertilizer.

Since many Florida soils are very acid in reaction the use of a base seems to be a thoroughly sound soil fertility program. Moreover, analyses indicate that magnesium is deficient in most coastal plain soils and the crop demands are higher than is commonly assumed. For many crops magnesium ranks third in importance among soil minerals (exceeded by patosium and calcium) when composition of plants is used as a guide. Furthermore, to supplement Florida soils with available calcium and magnesium is not only fundamental but a sound soil conservation practice.

Since calcium and magnesium constitute 60 to 75 per cent of the available basic elements in the most productive American soils regardless of type or treatment, it appears that nature had a reason for this relation. Moreover, magnesium is the only metallic element required in green chlorophyll. For this reason alone magnesium should have a comparatively high rating, because a low magnesium supply means an inefficient leaf which results in a poor manufacturing plant and a poor quality of crop. The synthesis or manufacture of sugars, starches, oils, acids and proteins is dependent on the green chlorophyll of leaves.

In a broad way, green plants are our greatest manufacturing machines in which raw materials such as water, carbon dioxide from the air and salts (as nitrates, phosphates and sulphates of calcium, potassium, magnesium, etc., supplied by the soil) are transformed into valuable commodities (sugars, acids, oils and proteins) through the action of chlorophyll and sunlight. When the soil fails to supply the necessary salts the quality and quantity of the crops are thus affected. These salts are the usual limiting factors in Florida soils (other than moisture) and hence a need for fertilizers.

The amount and proportion of the fertilizer nutrients contained in the plants are used generally as guides regarding the nutritive needs of plants. Although such a guide is not an absolute index of plant needs it is the best method of securing a picture of the nutrient requirements of crops. For the sake of brevity and clarity the relative amounts of nutrients in legumes, grasses and citrus are illustrated in graph 1. The grasses and legumes are included because they represent the nearest approach to cover crop needs even though grasses are considered more efficient feeders than trees and legumes.

The graphs represent average analyses (recent) as reported by the experiment station workers in Florida and California, and the complied data of Morrison's feeds and feeding (standard treatise on animal feeds) and are believed to be reliable. It was thought advisable to present the analyses of both citrus fruits and leaves because, after all, the fruit quality is a reflection of the leaf quality.

From the graph it may be seem that the relative amounts of nutrient elements (as supplied from the soil) appear to be in the same order and proportion for legumes, grasses and citrus fruits with a few exceptions. Nitrogen, potassium and calcium occur in the largest amounts in about the order named. The legumes contain somewhat higher amounts of nitrogen and calcium than do the grasses and citrus fruits; but it is rather significant to note that the citrus leaves contain a much higher content of calcium than do the legumes and grasses. This is especially true in the leaves from California citrus. The true explanation of this higher calcium content over that of the other plants is not known. Perhaps the nature of the soil is involved, but this does not explain the entire picture. Possibly the by-products from the synthesis of citrus acid requires a high proportion of calcium to counteract unfavorable products thereby produced.

The graph also shows comparatively high, and fairly constant, amounts of magnesium, phosphorous and sulphur in the different crops with fluctuating amounts of chlorine and sodium (possibly because of soil differences); but much smaller amounts of iron. Any soil fertility program should include reasonable amounts of these nutrients along with nitrogen, potassium and calcium; especially on sandy soils which are deficient in almost all nutrients. Although the nutrients vary from plant to plant, the ratio of one element to another is more constant and should be considered in a soil fertility program. The fact that available calcium and magnesium occur in a ratio of about 3 or 4 to 1 in productive American soils might be a valuable guide to follow in supplementing Florida soils.

Although iron is present in all the plants in small amounts copper, maganese and zinc occur in still smaller amounts and will not be discussed in this paper. The availability of the minor or trace elements seems to hinge around a favorable soil condition as much as a soil supply.

In general, the content of elements in the plant seems to reflect the available amounts in the soil within certain limits. This is markedly true in the case of magnesium, especially in citrus leaves. Analyses show that healthy green leaves contain as much as 0.5% magnesium, while bronze leaves contain as low as .02%. It is significant to point out that the leaves from California citrus average more than three times as much magnesium as do the leaves from Florida citrus This is explained in part by the differences in soil composition because it is generally known that the western soils contain more calcium and magnesium than do Florida soils. Just what relation exists between the calcium and magnesium content of leaves and the quality of fruit is not

*Research Director, Dolomite Products, Inc.

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definitely known but it would be reasonable to assume that where leaves were off-color (bronze) and sparsely scattered on the tree, the quality of fruit would be lower than if the leaves were plentiful and of good color.

Observations indicate that in most Florida groves some bronze leaves are to be found during the Summer and Fall if not at all seasons. Conservative estimates indicate that 75% or more of the groves are thus affected in varying degrees of severity. This deficiency is further confirmed by the extremely low magnesium content of grove soils which often contain 30 to 40 times as much calcium as magnesium. This ratio is considerably wider than that in productive soils.

It should be thoroughly understood that the percentage composition of a plant is not an absolute index regarding the proportion and amounts of nutrients to be applied in the fertilizer, but the analyses may be used as a valuable guide when properly interpreted. This is explained on the basis of the differences in leaching of one element compared to another and to differences in the fixing power of soils for one element compared to another as well as other factors. A classical example of this principle is shown with nitrates which leach readily while phosphates leach only sparingly if at all. Experience has shown that the average soil has such a high fixing power for phosphates, especially clays, that normally more phosphates are required in the fertilizer than nitrates. The situation regarding magnesium appears to be somewhat intermediate though not definitely known. Here is a legitimate place for some investigational work.

If the total available bases in our most productive soils consist of

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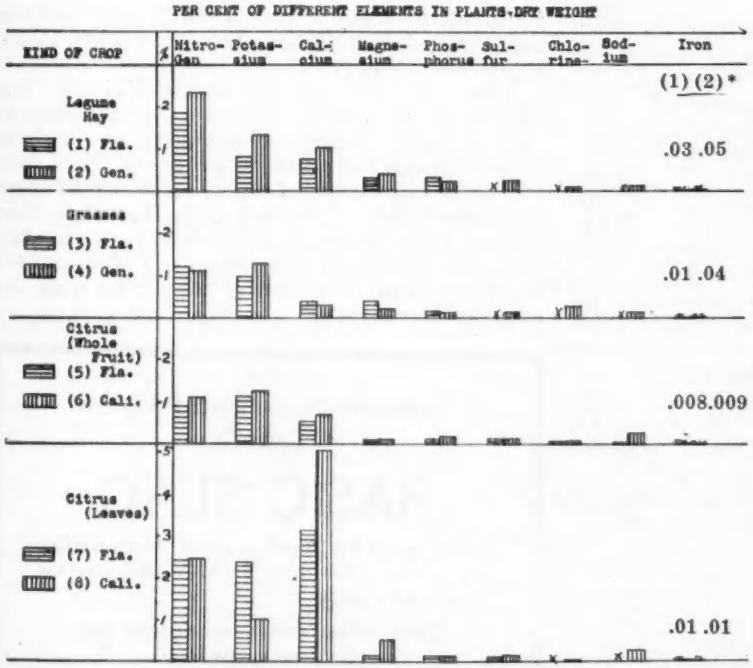
CHART I

Relative Amounts of Nutritive Elements in Some Important Crops



(1) Average Cowpeas, Beggarweed Soybeans and Lespedeza, Fla. Exp. Sta.
(2) Cowpeas, Soybeans, Beggarweed and Lespedeza, Morrison's Feeds and Feeding
(3) Carpet, Centipede, Bahia, Natal and Wire grass, Fla. Exp. Sta.
(4) Blue grass, Timothy, Oat hay, Sorghum and Millet, Morrison's Feeds and Feeding
(5) Oranges and grapefruit, Fla. Exp. Sta.
(6) Navel and Valencia Oranges, Cali. Exp. Sta.

(x) Data Not Given For These Crops
* Data for Iron too small to show graphically.

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TO PRORATE OR NOT TO PRORATE?

To prorate or not to prorate, and if so, how?

That is a question which at this writing is agitating the minds of Florida citrus growers and shippers to the almost total exclusion of the consideration of all other citrus problems.

At a recent meeting in Lakeland of citrus grower and shipper groups, varied opinions developed and the meeting adjourned without action on the proposed prorate agreement submitted by a committee previously named to formulate a tentative draft of a federal agreement governing the control of the industry during the present shipping season.

Objection to the proposed agreement was raised by certain shippers who suggested revision of the agreement to provide for a rearrangement of proration and less frequent allotment of prorates. This proposal met with serious opposition on the part of the Growers' Committee and certain shippers, and the meeting broke up without action.

Later, the Growers' Committee of eleven, by unanimous vote requested Secretary of Agriculture Wallace to call a public hearing of the industry for approval or disapproval of the agreement as originally outlined and submitted at the Lakeland meeting.

There appears to be a well defined and vital difference of opinion as to the advisability of a season prorate. Opponents of this feature contend that such a measure is unnecessary this season and that it would operate to the advantage of Florida's competitors in the citrus field. Adherents of the proposed agreement on the other hand point to last season's operations under the prorate as justifying the proposed prorate this year.

Whatever action is to be taken by Secretary Wallace, or by the industry itself should be taken at once. Both growers and shippers will profit by an early adjustment of existing differences and an early decision as to the methods of operation which are to govern the control of marketing and distribution of this season's crop. Delay in reaching such adjustment and such decision can result only in loss to all concerned. If we are to have a season's prorate, growers and shippers should know it, that they may be governed accordingly. If we are to have "emergency" prorates, that also should be known without delay.

AT LAST!

Just as this issue of The Citrus Industry is going to press comes announcement of the belated appointment by Governor Cone of six new members of the Citrus Control Commission to succeed the six members whose terms expired on September 10.

The six men named, W. L. Spivey, Floral City, Phil C. Peters, Winter Garden, E. C. Welles, Arcadia, W. M. Moseley, Fort Pierce, L. P. Thomas, Palmetto, and John Maxcy, Frostproof, are all well known citrus grove owners.

The character of the new members would seem to justify the Governor's statement accompanying the announcement of his appointments, that "everything is okay now." If the new members serve the industry as ably as the six members whose terms recently expired (and there is reason to believe that they will) everything will be okay.

The Governor also named an advisory committee of five grapefruit canners to consult with the Control Committee in planning an advertising campaign for cannery products. This committee is composed of Fred Elder of Bradenton, Ralph Polk of Haines City, Harold S. Norman of Lake Wales, R. D. Robinson of Orlando and Paul Stanton of Frostproof, all of whom are good men and prominently connected with the canning industry.

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Unexcelled soil amendment for citrus groves

ANALYSIS

Total Phosphoric Acid (Min.)	8.00%
Iron Oxide	18.50%
Silica	8.00%
Magnesium Oxide (Lime)	5.50%
Calcium Oxide (Lime)	45.85%
Manganese Oxide	3.00%
Equivalent Manganese Sulphate	6.39%
Fineness thru 100-mesh screen	Over 80.00%

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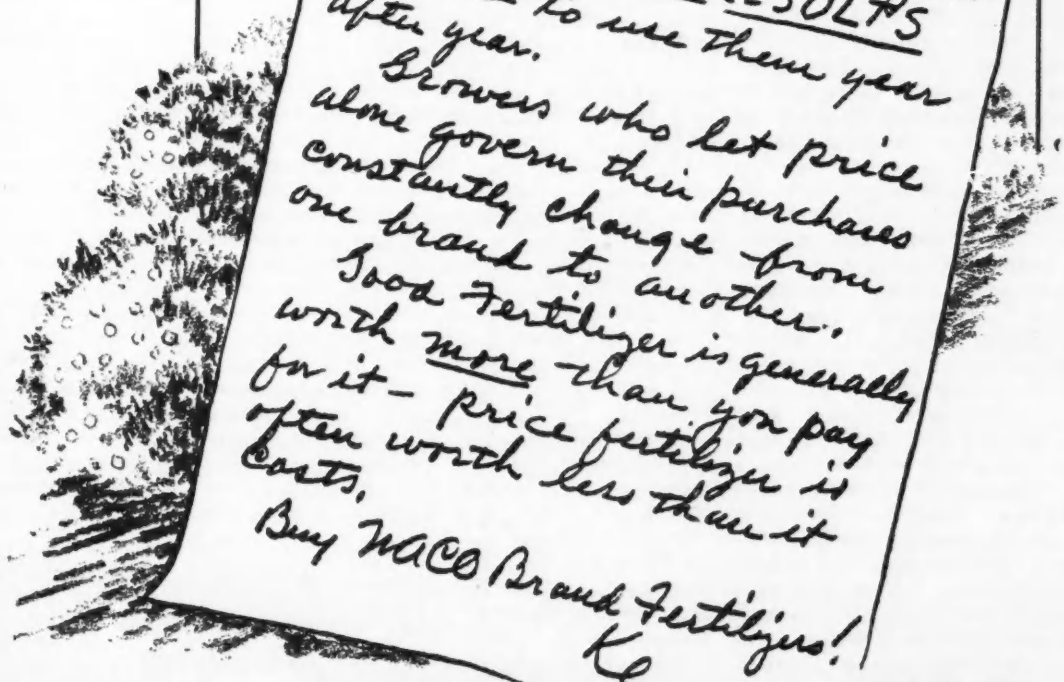

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NACO BRAND

Agriculture... As A Career

BY WILMON NEWELL
DEAN, UNIVERSITY OF FLORIDA
COLLEGE OF AGRICULTURE

As the time approaches for the fall opening of the colleges and universities, many young men, and particularly those who have recently graduated from High School, are giving thought to their future careers. Many are undecided as to what profession or vocation they will follow, while many others have formed rather definite opinions as to what their future careers will be.

Except for those who are planning to enter the trades, practically all of these young men will either attend college, or are ambitious to do so.

To those who want more of an education than has been obtained in high school and who wish to obtain a fundamental knowledge of the world in which we live, together with a reasonable appreciation of art and culture, we can recommend the General College of the University of Florida. Full particulars regarding its purpose and scope and the courses it offers can be secured by addressng the University of Florida at Gainesville.

However, my purpose here is not to discuss college education in its general phases but, rather, to discuss agricultural education, with particular reference to its opportunities and how it may be obtained.

Successful agriculture has become very complicated in recent years, and will become more so in the future. The successful farmer must have not only a knowledge of crops, fruits, soils and livestock, but he must also possess a working knowledge of marketing and the financing of farm operations — usually referred to as "agricultural economics." To combat insect enemies and plant diseases that may attack his crops, he needs a knowledge of botany, entomology, plant pathology, chemistry and bacteriology. To properly preserve his soils, while at the same time using them — thus conserving his bank account while collecting his interest or income so to speak — he must needs understand the principles of soil conservation. A college course for four years, devoted primarily to these subjects is time and money well invested for the young man who expects to be a citrus grower, truck grower, cattleman or general farmer.

While we stress this training for future farmers, we want to point out, at the same time, that there are also many opportunities in what may be termed strictly professional agriculture. The United States Department of Agriculture and the various state experiment stations employ several thousand specialists in their important research work. These include agronomists, botanists, bacteriologists, plant pathologists, plant breeders, chemists, soil specialists, poultry and dairy specialists, veterinarians, livestock specialists, agricultural economists, marketing specialists, agricultural editors, refrigerating and agricultural engineers, librarians, statisticians, meteorologists, various technicians, administrators and so on. The ranks of this army of scientists must be constantly replenished from among the agricultural college graduates.

True, most of these positions require more training than is secured by taking four years in college, for men who rise to the top, or near the top, in these professions are usually men who follow up their college courses with advanced study leading them to the doctors degree. However, the college four years is always the first step towards these careers.

Agricultural extension work will appeal to others. There are more than three thousand county agents in the United States, together with numerous specialists and administrators who work with them. All must make their start by completing four years training in a standard agricultural college.

We must not overlook the fine opportunities for teaching in the many Smith-Hughes agricultural high schools. This work is pleasant and inspiring and, like the other professional fields in agriculture, is fairly lucrative.

My time does not permit of discussing the opportunities for the trained agricultural man in commercial fields. They are many.

There are two points I wish to stress. The first is that we believe the University of Florida offers exceptional advantages to the young man who wishes to prepare himself for successful private enterprises in agriculture or, on the other hand, for a professional career in one of the sciences basic to agricultural advancement. Those who enter the University of Florida with either objective in mind, first take two years of foundation work in the General College, after which they spend two years in the College of Agriculture, devoting their time to technical subjects. This program has a particular appeal to 4-H club members, Future Farmers of America and others whose experience has already given them an insight into the attractive possibilities in agriculture.

The second point I wish to stress is that we are not urging any young man to attend our College of Agriculture unless he believes he has a real interest in either farming or professional agricultural work. In agriculture, as in every calling, a genuine love for one's work is the first essential to success. Do not come to our College of Agriculture just because you think we might find a job for you when you graduate. We might, and, again, we might not.

To those young men who sincerely and earnestly desire to fit themselves for responsible positions in the agricultural field, or wish scientific knowledge to apply at some future date on their own farms, we extend a sincere invitation to take advantage of the opportunities offered by the College of Agriculture of the University of Florida.

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Fred C. Whitney
317 6th Ave., Des Moines, Iowa

Cover Crops And Stink Bug Damage . . . In Citrus Groves

BY J. R. WATSON
ENTOMOLOGIST, STATE EXPERIMENT STATION

The time is approaching when our citrus growers should be on their guard against some of the larger plant bugs which sometimes attack citrus and cause much damage. There are several species of these; two or three species of the brown stink bugs, the leaf-footed plant bugs, but the most abundant and troublesome of all is the southern green stink bug, often called "pumpkin bug" by our growers. It is this bug we have especially in mind, but control measures will also apply to the other.

As was also the case last year, pumpkin bugs seem to be less numerous than usual in the peninsular part of the state this year, but are especially numerous in west Florida where our satsuma growers may have trouble. This scarcity in the southern part of the state is apparently due to a high percentage of parasitization by the feather-legged fly last year and the year before.

These insects breed in greatest numbers on legumes. Of the common legumes planted in citrus groves for a cover crop their first preference is cowpeas, followed by beggarweed, Crotalaria striata, velvet beans and Crotalaria spectabilis. As long as there are plenty of these cover crops in the grove in good, succulent condition the bugs are not likely to go to the citrus. It is only when something happens to make the cover crop no longer attractive that they move on to the citrus fruit.

In the case of the crotalarias they do not care much for the leaves and stems. With these plants it is the young pods, from which they suck the sap, that attracts them, and anything that takes the young pods off, such as high wind or drought, is liable to drive them to citrus. The bugs themselves, if they get sufficiently numerous, may take all the pods of Cratalaria striata, and then they will move on to the citrus. As these cover crops die down with the approach of the dry weather of the fall there is a continual migration to the citrus fruits, particularly if the latter are approaching maturity. The bugs prefer not only mature fruit but also those varieties with a thin rind. Satsumas are the first to be damaged in the fall. Tangerines, later on, are a great favorite, followed by Hamlin oranges, Parson Browns pineapples, and seedling oranges. The valencia oranges and grapefruit are not apt to suffer severely.

The fruit, if punctured often enough by these bugs, will drop from the trees. Even those that do not drop are liable to decay in transit, as the punctures of the bugs make convenient avenues of access for various fungi, so that a punctured fruit is usually a total loss.

From now until the fruit is picked, or the bugs are put into hibernation by cold weather, which usually will not occur until November, the cover crop should be watched, and if there are numierous plant bugs there it should be mown inside the next two or three weeks. The reason for mowing at this time is that the bugs belonging to the last generation in the fall are then mostly in their early or nymphal stages. They have no wings, and therefore cannot fly, so that if the cover crop is mown at that time the vast majority of them will perish, particularly if the fruit in the groves is not at that time suffiently mature too attract them.

It is not a bad idea to leave a little strip of cover crop in the middle between the rows, first cutting around the trees. If the bugs are numerous this cutting should be through. After the mowing machine has gotton all that it conveniently can a man with a scythe should follow to complete the work, moving around the trees first. These bugs will then move on to the strip of cover crop left in the middle and be drawn from the trees. A few days later this middle strip may also be mown. The bugs will be so far away from the trees that not many will reach them, particularly if there are low limbs touching the ground.

We know of no spray which is effective in killing these bugs which will at the same time be safe to use on citrus fruit. Once allowed to get on the fruit in dangerous numbers the only control measure that we know of is to collect the bugs in nets. This

(Continued on next page)

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Some Plant Collecting Experiences

BY ERDMAN WEST, MYCOLOGIST
STATE EXPERIMENT STATION

Many of you may be wondering just what a plant collector does and why. Perhaps the why should come first. Here at the Agricultural Experiment Station we are attempting to complete our Herbarium of Florida plants. An herbarium, by the way, is a collection of plants, pressed, dried, mounted and arranged for ready reference. It is used to identify unknown plants when only parts of them are available. To be of the most value an herbarium should contain specimens of every plant known to grow in the State but it takes a great deal of collecting and searching to even approach this goal. So our plant collector is always looking for plants, usually new or rare.

Our plant collector must naturally go into all sorts of places where plants grow. As a result he is accused of being slightly crazy by Mr. and Mrs. average citizen. For example, several of us were looking for specimens of a new, but small fern to grow in the grass on the ditch banks along a main highway near Gainesville. One good specimen had been found and we were crawling around on our hands and knees searching carefully for more. Presently the voice of an attendant at a nearby filling station inquired, "you all lost something — kin I help you all find it?" Now, just how would you explain to that gentleman that the plant we were hunting was not lost because we had not yet found it? In his estimation we were all somewhat crazy.

Our most interesting experiences usually happen when we are collecting alone. One day while wandering down the beach below Lake Worth, I noticed a peculiar vine with unusually large pink flowers. I did not recognize it and began to examine it for diagnostic characters. The leaves, stems, and flowers were examined in turn and the plant tentatively identified as to family. Since seed-pods are often good indicators of a plant's relations, a search was made for those. The plant was large and evidently had been blooming for some time, but no seed-pods or fruit could be found. A fifteen minute search without results was provoking. In exasperation, I dragged up a large portion of the vine to be cut up for specimens. On the underside of the runners were small pods on rather stiff stalks. The fruits were buried in the sand like peanuts. So the mystery of the Okenia fruit was solved.

However, not all experiences end so happily. While collecting near Seminole Springs, a nice looking fern was observed growing in the crown of a cabbage palmetto about 20 feet from the ground. No others could be seen closer to Mother Earth. Since this was a new locality in the distribution of this particular fern, specimens had to be obtained somehow. It was relatively easy to climb the trunk and obtain the ferm specimens. But the plants were to fragile to be dropped that distance and negotiating the return trip with two legs and only one useful arm presented difficulties. All went well until the last six feet remained. At that point something went wrong with the collector's grip and he slid the rest of the way. The fine specimens were saved but the injuries to the collector's anatomy made their value seem rather doubtful.

We would expect plants to stay in one place and wait for us to find them. This is not always true as the following experience proves. On Orange Lake there is a very fine Alligator Lily that occurs on certain of the floating islands. As far as we can tell the plant is not listed in the botany books. Flower specimens were obtained this spring. Recently we wished to obtain seed-pods and bulbs. On returning to the site of the flower collecting trip of the Spring, we found the island had vanished, together with all traces of the lily. The boat was turned about the kicker started again. After spending an hour and a half exploring the shoreline of that part of the lake and visiting various islands sailing over the water, our plant was rediscovered. The island, or a similar one, bearing hundreds of our lily plants was found snugly protected in a little bay along the shore, almost invisible from the open water. Some seeds and a number of bulbs were

(Continued on page 22)

COVER CROPS AND STINK BUG DAMAGE IN CITRUS GROVES

(Continued from preceding page)

is not an impossible task and can indeed be done for anywhere from $2 to $5 per acre. However, if the cover crop is given proper attention at this time this outlay can be avoided.

Many of these bugs are eaten by birds, among them the domestic fowls, including chickens, turkeys, and especially guineas. We have never seen a heavy infestation of these bugs in a grove where numbers of chickens wandered regularly. Chickens, however, usually do not wander very far from the house and barn, therefore they give less protection to the more remote parts of a large grove. Guineas and particularly turkeys would be more effective under such conditions.

It does not necessarily follow that all cover crops should be mown at this time of the year. It often happens that even the favorite cover crops do not harbor many bugs. They have many enemies. Besides birds there are insect enemies which destroy a great many of them, but the time is upon us when growers should be on the lookout for these bugs and if found in any considerable numbers the cover crop in the grove should be mown inside the next three weeks. Mowing the cover crop at this time will also reduce the damage from two other pests which are often troublesome in the fall — grasshoppers and rabbits. Mowing the cover crop exposes these pests to their natural enemies, especially birds. Grasshoppers are rather numerous in many sections and may be troublesome in some groves, especially to young trees.

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Consulting Horticulturist
Grove Advisory Service,
Soil Investigations
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DISTRBUTION AND PRICE OF 1936-37 FLORIDA CITRUS CROP

(Continued from page 5)

to any other state. Georgia received thirty-seven per cent of the oranges, twenty-nine per cent of the grapefruit and twenty-six per cent of the tangerines trucked from Florida. Georgia, North Carolina, Virginia, District of Columbia, Alabama and South Carolina received a combined total of ninety-one per cent of the oranges, seventy-seven per cent of the grapefruit and seventy-seven per cent of the tangerines trucked into interstate commerce from Florida.

Auction Receipts

Approximately thirty-nine per cent of the 1936-37 grapefruit, forty per cent of the orange and forty-nine per cent of the tangerine sales were at auction.

1936-37 Crop

The 1936-37 citrus crop was the second largest in history. Total citrus production amounted to eighty-one million boxes or about five million less than the record production of the 1934-35 season. Because of the large production indicated at the beginning of the season, it was feared that the prices of citrus fruit would be very low. There were, however, such favorable factors as higher price level, relatively low production of competing crops and higher wages. A number of things happened during the season which had their effect upon price. Labor trouble is considered as one factor causing unrest, lack of confidence and probably price depressing, while the freeze in California, the war in Spain, extensive advertising on the part of the State and the chain store, Government purchase and marketing agreements were considered price elevating. It is claimed that the quality of Florida Citrus for this season was the best in history.

Florida Orange Prices

The trend in the auction prices for Florida oranges was almost steadily downward from October 5 to December 12. From then until January 7, the price increased and with the exception of two dips, the price continued to increase until March 22. From then through the remainder of the season, the trend was downward. United States shipments of Oranges followed almost the reverse trend to prices. United States shipments remained fairly steady after the first of March. Chicago and Cleveland auction prices for Florida oranges followed fairly closely the same general price trend as all auction prices of Florida Oranges.

New York Orange Prices Compared With Cleveland and Chicago

Auction prices since the season 1925-26 indicate that after adjusting for additional marketing costs to Cleveland and Chicago, New York has paid the higher prices. The gross price during the last three years has been almost the same for Cleveland as for New York. Since 1929-30 Chicago has paid higher prices than New York, but as indicated before it costs more to market fruit in Chicago than in New York.

Seasonal Trend in Orange Prices by Size

All sizes of Oranges followed the same general price movement throughout the year, size 126 being lower in price than smaller sizes. Size 150's and 200's were the highest priced during the first two weeks of the season, but from then on until Christmas the price did not differ very much for different sizes. After January 1, size 126's began to run considerably lower than smaller sizes especially sizes 250's and 288's. The seasonal simple average for medium and small sized oranges was from fifty to eighty cents higher than 126's and larger. Number 1 Oranges brought more for each size than number 2's. The spread between prices of 1's and 2's became smaller with smaller sizes. The simple average price of number 1, size 126, was twenty-eight cents per box higher than number 2 of the same size. For sizes smaller than 250's the spread was only about twenty-two cents per box.

Grapefruit

Grapefruit has been and will probably continue to be a serious problem from a marketing standpoint. The large number of young trees indicates that United States production will continue to increase for the next five to ten years. Adverse weather conditions or other things might happen which will alter the picture. The indications are, however, barring adverse conditions, that demand must increase or price will continue to go down.

So much for the general picture. Now what happened in grapefruit marketing this past season? Daily shipments varied considerably, the trend being upward until about the middle of December. Shipments decreased from the middle of December until the first of January. During the early part of January shipments were greater than in any part of the season up until that date, the shipments declining, however, from the middle of January until April 3. Along in the middle of April shipments again increased, only to decrease in trend from then to the end of the season.

Grapefruit Auction Average Prices Season 1936-37

Regular grapefruit in standard boxes averaged approximately $2.01 for number 1 fruit and $1.82 for number 2. Regular Indian River grapefruit in standard boxes averaged $2.23 for number 1 and $1.92 for number 2; regular grapefruit, wire bound boxes, $2.11 for number

(Continued on page 18)

IMPRESSIONS

(Continued from page 7)

and after a dozen years residence here now the owner of about 450 acres of grove, is now much improved in health after a spell of the misery this summer. Practically his old self in looks at any rate.

J. W. Sample of Haines City, long one of the pillars of the Exchange, just as big as life and twice as natural; and the passage of time doesn't seem to have impaired his capacity for enjoying his meals.

W. B. (Bill) Goding of Apopka, presiding elder of the Richard Whitney interests in Florida, for many years was a living example of the futility of food; but about four years

(Continued on page 22)

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A RESEARCH PROGRAM WITH DOLOMITIC LIMESTONE

(Continued from page 9)

60 to 75 per cent magnesium and calcium it would be only reasonable to assume that these elements played an important part in soil fertility.

Although sulphur and sometimes chlorine are required by crops in amounts equal to that of magnesium these two elements are usually taken care of as carriers of other nutrients. For example sulphur is a constituent of super-phosphate, ammonium sulphate and sulphate of potash; and chlorine is a constituent of muriate of potash and kainit with small amounts in many other ingredients. Sodium appears to be present in varying amounts in almost all fertilizer materials and apparently deficiency symptoms of sodium, chlorine and sulphur have not been noted of not knowing the nutrition problems involved. Naturally attempts to supply this deficit have been made within the past few years largely from magnesium lime and magnesium sulphate. Since the sulphate form of magnesium is rather soluble in water it is not only quickly available but leaches from the soil very readily. The fact that magnesium in dolomitic limestone is only slightly soluble in water yet available when mixed with the soil and fertilizers (or when in contact with plant roots) makes it worthy of careful consideration on Florida soils, not only as a soil conditioner, but to supply readily available calcium and magnesium as well.

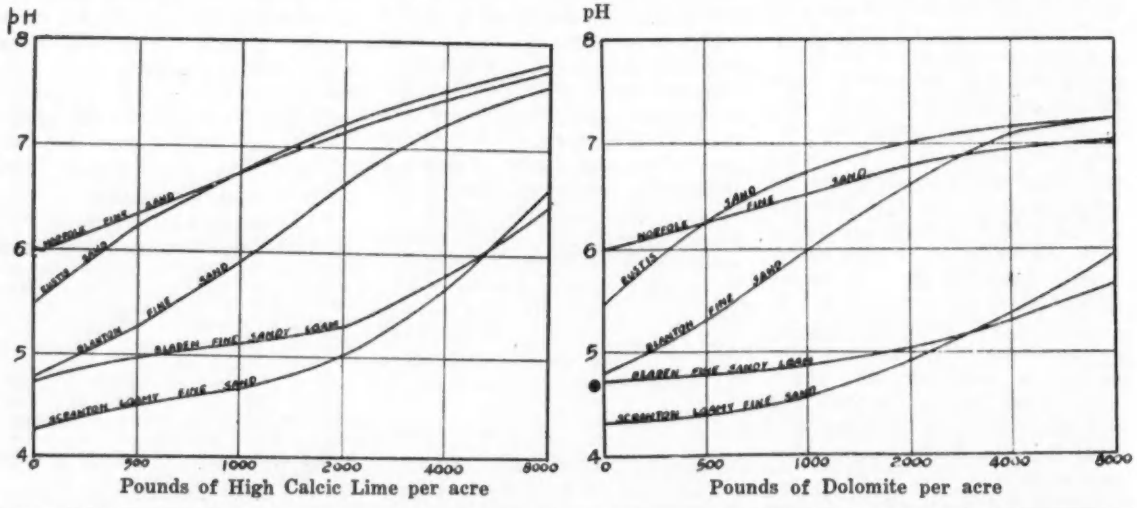
As a rule soils with a reaction of pH 4.5 to 5.5 have a low supply of available calcium and magnesium. Moreover high lime loving plants such as citrus and legumes apparently require calcium in the carbonate form for best production. This partially explains the beneficial results secured with these crops from the use of magnesium lime on Florida sandy soils.

The question of lime in Florida has caused many growers grave concern in the past due to unfavorable results following the use of hydarted and high calcic lime several years ago. Consequently many of the growers in the state have viewed the use of dolomitic limestone with a certain degree of caution and fear. But fortunately the properties of Dolomite are different from that of high calcium and hydrated lime especially in regard to its influence on the reaction of the soil and availability of other nutrients. Field trials and experimental results indicate that dolomitic limestone does not produce as high pH values as does high calcic limestone, possibly due to differences in solubility in carbonated water. This relation is shown in graph II with 5 Florida soils representing a wide range in buffer capacity, but typical of grove soils. While these soils were treated under controlled conditions, the results parallel those of field trials. As may be seen in the graph the degree of alkalinity is never as high with Dolomite as with high calcic lime regardless of given soil and amounts used and it is only with the excessive amounts of Dolomite that a natural reaction is obtained in soils with a low buffer capacity and with a high buffer capacity as Scranton loamy fine sand, the neutral reaction is not reached with 8,000 pounds per acre. This property of dolomitic limestone has a distinct advantage on sandy soils with a low buffer capacity so general in Florida. It appears to be the safest soil conditioner available besides supplying perhaps the most economical source of magnesium. The high calcic lime is more liable to produce a dangerously high pH value (pH 7.0 and above) and at the same time create an unbalanced ratio in the soil. The question of the proper calcium-magnesium ratio in our sandy soils is not definitely known.

Examinations indicate that the supply of available calcium in citrus

CHART II

The Influence of Varying Amounts of High Calcic Lime and Dolomite on the Reaction of Different Soil Types



grove soils is often forty times that of magnesium. For most crops this is a rather wide ratio and is certainly much wider than that of productive soils. It is interesting to note that the calcium-magnesium ratio in citrus fruits as well as the cover crops are in line with the ratios in our productive soils, namely, about 4 to 1. The fact that magnesium salts are more soluble than calcium salts eliminates the question of securing cumulative or toxic amounts of magnesium following the use of Dolomite in humid climates and especially on sandy land. In fact, experimental records in humid regions show no evidence of magnesium toxicity from applications of Dolomite. While no specific recommendations are made in this paper it appears that a grower would be entirely safe in using 1,000 pounds of Dolomite per acre on sandy soils with an acid reaction of between 4 and 5 and 2,000 pounds on sandy loam soils of similar reaction. Lesser amounts would naturally be required to obtain favorable soil conditions on soils with pH values of 5 to 6. The optimum range for maximum crops yields is not definitely known but is generally considered as being about pH 6.0 to 6.5.

The fact that magnesium phosphate is more soluble than calcium phosphate may further explain the beneficial effects derived from the use of magnesium lime over that of high calcic lime. It appears that where sandy soils are generally deficient in magnesium that a continuous supply in the soil would be necessary to take care of the plant needs. This assumption is apparently confirmed by a limited amount of field trials on sandy soils of a low buffer capacity. The results to date appear to offer an opportunity to make a permanent contribution to the soil fertility problem in Florida not only with citrus but with other crops. Naturally the growers want to know the most favorable soil reaction for the production of the best quality crops and the amounts of calcium and magnesium for optimum production on sandy lands. They also wish to know what effects magnesium lime has on the availability and utilization of soil nutrients in general. Since the soil problem in Florida is the most extensive factor involved in the production of crops, it would seem not only logical, but sound economics to so amend the soil as to increase the efficiency of all factors concerned, and to investigate thoroughly the encouraging results secured from the use of Dolomite. For these reasons the Dolomite Products, Inc., has inaugurated a research division for the purpose of studying in a systematic way the place and use of magnesium lime in Florida agriculture. The plan calls for applications of varying amounts of magnesium lime to our major soil types with different crops in addition to the regular fertilizer treatments. The study will naturally be conducted over a period of years; and in order to include the varied factors involved some supplementary treatments such as iron, copper and zinc will be made. These treatments are to be correlated with soil reaction, plant responses and available nutrients in the soil. This type of information will no doubt prove beneficial to the growers of Florida because experimental data dealing with this subject are rather limited. Moreover, there are many things to be learned regarding the most profitable use of Dolomite and the systematic study under field conditions appears to be the best method of securing reliable information and avoiding possible unforeseen difficulties.

We hope that the growers will be open-minded in regard to this study and assist in determing the value and place of magnesium lime in our varied soil and crop problems. In many instances a grower can go a long way in solving his soil problem by leaving control blocks of new material used to serve as a basis for comparison. Failure to do this simple operation is liable to lead to confusion, doubt and expense. Other things being equal the grower who has an efficient soil will produce a higher quality of crop at less cost than the grower who does not.

PURCHASE OF 24,613 ACRES FOR NATIONAL FORESTS IS APPROVED

Purchase of 24,613 acres of land to be added to three national forests in Florida was recently approved by the National Forest Reservation Commission, according to a report received by the State Agricultural Extension Service.

A total of $65,778.95 was to be paid by the federal government for the land.

Of the total 23,511 acres will be added to Ocala National Forest, 982 acres to Chotawhatchee National Forest, and 120 acres to Apalachicola National Forest.

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DISTRBUTION AND PRICE OF 1936-37 FLORIDA CITRUS CROP

(Continued from page 15)

1's and $2.04 for number 2's; Marsh Seedless grapefruit in standard boxes averaged $2.47 for number 1's, and $2.25 for number 2's; Marsh Seedless Indian River grapefruit, standard boxes, $2.83 for number 1's and $2.45 for number 2's. Assuming $1.60 as the marketing cost, the net to grower price for auction sales last season was forty-one cents for number 1 and twenty-two cents for number 2's. Marsh Seedless grapefruit excluding Indian River brought eighty-seven cents for number 1's and sixty-five cents for number 2's. Growers' net price for Indian River Marsh Seedless was $1.23 for number 1's and eighty-five cents for number 2's.

Prices of Grapefruit by Size Standard Boxes

The spread between prices by sizes was not so great in grapefruit as in oranges. The lowest average price (simple average) for number 1 grapefruit was for size 126 and for number 2's, size 36. Size 80 was highest for both 1's and 2's. Like oranges grade 1 sold for higher prices than grade 2. The spread in price between grade 1 and 2 was greater for larger sizes and less for smaller sizes with

Table I
Percentage Distribution, Florida Oranges

State	30-31	31-32	32-33	33-34	34-35	35-36	36-37
N. Y.	28	32	34	40	41	37	36
Penn.	15	15	17	16	16	15	15
Mass.	6	8	9	8	6	11	11
Ohio	7	8	7	6	6	6	6
Ill.	5	5	4	5	5	5	5
Md.	4	4	4	3	3	3	3
Total 6 States	65	72	75	78	77	77	76

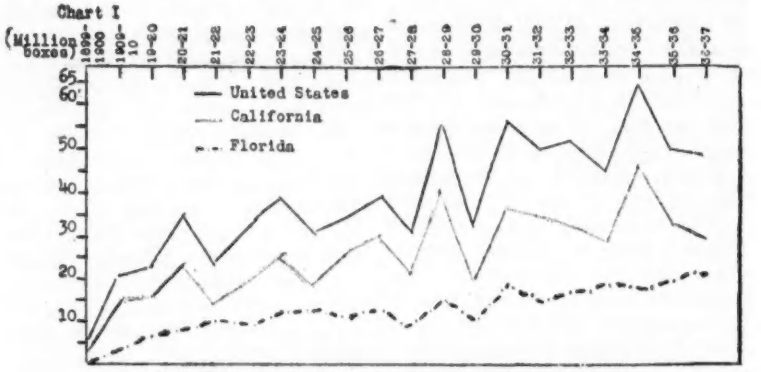
Table II
Percentage Distribution, Florida Grapefruit

State							
N. Y.	24	33	35	38	40	40	38
Penn.	11	12	13	13	13	14	14
Mass.	5	6	7	5	6	8	10
Ohio	8	9	8	7	8	8	7
Ill.	9	6	5	8	6	6	3
Total 5 States	57	66	68	71	73	76	72

Table III
Percentage Distribution, Florida Tangerines

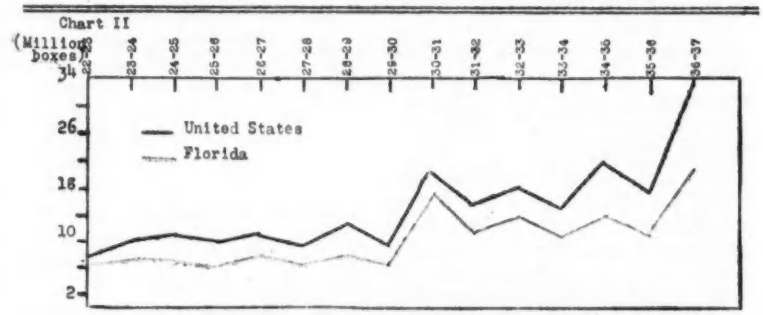
State							
N. Y.	34	34	41	45	46	41	36
Penn.	20	20	17	19	19	16	19
Ohio	7	8	7	6	7	9	9
Ill.	7	6	6	6	5	7	8
Mass.	6	6	7	5	5	7	6
Mich.	4	4	4	3	4	5	6
Total 6 States	78	78	82	84	86	85	84

Chart I



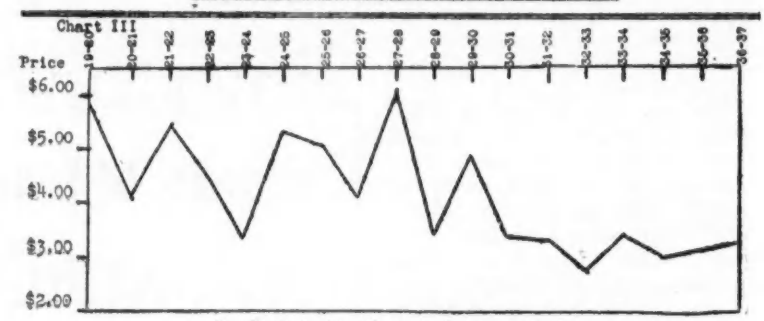
United States, California and Florida Orange Production

Chart II



United States and Florida Grapefruit Production

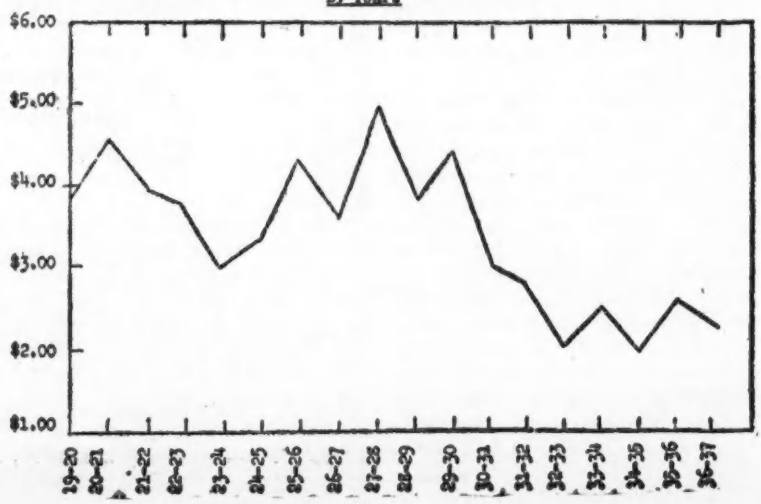
Chart III



New York Auction Prices of Oranges By Years

Chart IV

New York Auction Prices of Florida Grapefruit By Years



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grapefruit than was true with oranges. Number 1 grapefruit, size 36, averaged (simple average) forty cents more than number 2's of the same size. The difference in price was less and less as sizes became smaller. Size 126, number 1 grapefruit brought only two cents more than number 2's.

If $1.60 per standard box be used as the cost of marketing grapefruit, there were a number of days during the season that number 2 regular grapefruit did not bring marketing costs. Auction price for this grade of fruit averaged less than $1.60 per box from November 2 through December 10. Again during the months of January and February this grade of grapefruit brought less than $1.60 per standard box. (Number 2 grapefruit is used in this comparison because the grade more nearly represents the grade bought by canners and the Government). After adjusting roadside canning prices by using thirteen cents picking and delivering to road cost it appears that canning prices since the first of November, the date canning operations began, were higher than auction prices less $1.60 on number 2 regular grapefruit. These data indicate that, if practical, a larger proportion of the lower grades of grapefruit should have gone to canners. This would have netted larger returns for the lower grades of fruit as well as given the fresh fruit trade a better average grade. Better average grade means better appearance, a factor considered quite important in the fresh fruit market. During the period from the latter part of November to first of March the Government purchase program was in operation. During most of the time the government was buying grapefruit the prices were higher than those obtained from canning and fresh fruit channels. Government prices were forty-six cents per box loaded bulk in the car. It was required that grapefruit be number 3 or better in grade. The Government ceased its purchases about March 1 at which time canning and fresh fruit outlets were paying considerably more than the thirty-one cents net to grower. Government purchase of grapefruit amounted to 927,000 boxes. A much larger volume might have been sold to the government had there been no restrictions in the purchase program. It is also claimed that the spread obtained by packers was not sufficient to pay expenses on government sales.

Comparison between Florida and Texas grapefruit — Florida Marsh Seedless grapefruit is probably more comparable to Texas grapefruit than is regular grapefruit, or all grapefruit. Indian River fruit was also excluded in making comparisons. Florida Marsh Seedless, excluding Indian River grapefruit, averaged approximately the same price as Texas grapefruit for the same period that Texas was in the market. Very small quantities of Texas grapefruit were shipped after April 1 because of the Federal quarantine against morellos fruit worm, sometimes referred to as the Mexican fruit fly. Grapefruit prices increased after April 1. Therefore, the season average for Florida Marsh Seedless grapefruit is approximately ten cents a box higher than Texas grapefruit. Indian River Marsh Seedless grapefruit was approximately fifty cents per box higher than Texas grapefruit.

Only a small quantity of grapefruit was sent to Chicago markets between October 15 and April 15 which is the period of heavy Texas shipments. There were considerable quantities of Marsh Seedless grapefruit sold in Chicago between April 1 and June 4. Regular grapefruit, however, was sold in Chicago only during the first part of the season, only a few cars having been sold at any other time of the year. There were more number 1 regular grapefruit sold in Chicago than number 2 regulars. The average gross prices on the Chicago and Cleveland auction markets were higher than the New York price, but costs were also greater. The net price was in favor of New York.

Almost 6,750,000 field boxes of grapefruit were sold for canning purposes last season, approximately two million boxes more than has been canned during any other season. About five and one half million boxes

"dolomitic limestone -- corrects -- frenching and bronzing"-

Growers representing over 70,000 acres of citrus in Florida assembled last month at Camp McQuarrie for their fourth annual Citrus Growers Institute heard many interesting and factual statements — none more important than as reported in the state press reproduced here. Write for additional information.

The two most important things needed by growers is a knowledge of marketing and better knowledge of fertilizers, he said.

USE THREE FERTILIZERS

In a technical address on fertilizers, F. M. O'Byrne of Lake Wales said the best practice is to use three applications of balanced fertilizers a year, or one application of a top dresser in the Spring, followed by two applications of balanced fertilizer, Summer and Fall.

Fertilizers should be spread around young trees in a radius about twice the distance of the height of the plant for best results, he said; this encourages a large root system.

More damage is done in Florida by growers using too little fertilizer, or in applying it wrong, than in using too much, O'Byrne said.

Experiments he has made with dolomitic limestone indicate that it cures frenching and bronzing, and when used with a combination of rare elements — iron, copper, magnesium — reduces ammoniation, splits and aids in growing bigger cover crops.

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were canned in the 1934-35 season. The per cent of the grapefruit crop going into cans has been increasing since the 1931-32 season. Last season thirty-seven per cent of the total Florida production was canned. Canning prices of grapefruit have followed the same general trend as auction prices, but apparently cannery prices have been increasing in comparison to auction prices. Another condition seems to exist between auction and cannery prices; cannery prices are relatively higher during seasons of relatively large production. During the 1932-33 season cannery prices were $1.80 less than auction prices. This was a season of relatively large production. The following year production was light and the spread was $1.84 per box. Again during the 1934-35 season the spread decreased while the production increased. The 1935-36 production was considerably less than the previous season and cannery prices low as compared to other seasons. The past season was no exception to the rule. Cannery prices were relatively high with relatively high production.

Table IV
Florida Citrus Season 1936-37

Sold at Auction:	Percent
Grapefruit	39
Oranges	40
Tangerines	49
Shipped by Truck:	
Grapefruit	12
Oranges	17
Tangerines	15
Total	14
Shipped Mixed Carlot	11

Table V
Auction Prices, Florida Grapefruit 1936-37

	No. 1	No. 2
Reg. Standard Boxes * Indian River	$2.01	1.82
Reg. Standard Boxes	2.23	1.92
Reg. Wire bound boxes Marsh Seedless	2.11	2.04
Standard Boxes * Indian River	2.47	2.25
Marsh Seedless Std. Bxs.	2.83	2.45

* Indian River Not Included

Table VI
Percentage Truck Distribution Florida Citrus, 1936-37

State	Oranges	Gpft.	Tan.
Georgia	37	29	26
North Carolina	14	16	14
Virginia	13	11	13
Dist. of Columbia	10	10	8
Alabama	9	6	8
South Carolina	8	5	8
Total 6 States	91	77	77

Grapefruit Production Less Quantity Canned

Though quantities of grapefruit canned increased quite rapidly both from a number of boxes standpoint and per cent of crop, there were still more grapefruit in the state last season after deducting that canned from total production than has been true in any other season except the 1930-31 season. Production less quantity canned has been averaging from eight to ten million boxes since the 1931-32 season. This year's production less quantity canned will equal approximately eleven and a quarter million boxes. After deducting government purchases from the eleven and a quarter milllion boxes there would still be more fruit remaining than has been the case in any season since 1930-31.

Summary and Conclusions

The 1936-37 citrus crop turned out to be much more successful than was anticipated at the beginning of the season. Canners paid approximately fifty cents per box roadside, auction paid $2.32 which netted approximately sixty-two cents to the grower. This includes Indian River and Marsh Seedless grapefruit. The largest quantity of fresh grapefruit was marketed this year than in any other year in history. Florida production less quantity canned was the largest of any year since the record year of 1930-31. These figures would

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indicate that as much grapefruit as ever is going into fresh fruit channels. An analyses of this season's prices by grade and size would indicate that a larger proportion of the lower grades of grapefruit should have been canned. Though fresh fruit prices as a whole were higher than canning prices, canning prices were higher for certain grades and sizes

Table VII
Production, Auction Price and Price Paid By Canners For Florida Grapefruit

Year.	Production Million Boxes	Auction Price	Cannery Price	Auction Less Cannery Price
31-32	10.8	2.48	29.2	2.178
32-33	11.8	2.06	26.2	1.798
33-34	10.7	2.39	54.7	1.843
34-35	15.2	2.00	32.4	1.676
35-36	11.5	2.57	66.8	1.902
36-37	18.0	2.23	50.4	1.726

Outlook for 1937-38

Apparently the 1937-38 citrus crop will be almost as large as the 1936-37 crop. Florida's grapefruit crop has been estimated by some as being between twelve and fourteen million boxes, but with the increase in Texas and other grapefruit states the total grapefruit crop may be almost as large as last year's crop. It is difficult to make an estimate of the orange crop this early especially the Valencia crop of California. Some are estimating that Florida's Valencia crop will be larger than last seasons and the total orange crop for Florida about equal to that of last year.

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NITROGEN
with the
Vital Elements
in
NATURE'S OWN
BALANCE and BLEND

AGED AND MELLOWED
SINCE TIME BEGAN

IMPRESSIONS

(Continued from page 15)

ago, when he gave up pitching horse shoes, he began to take on weight, and right now looks to be in first class killing condition, come cool weather.

When we look over fellows like C. C. Commander, Joe Wynn, Mike Dorsett and Bill Goding we wonder if ever the time will come when we don't have to stand twice in the same place to cast a good substantial shadow of ourself. What a lot of food we have practically wasted! Once we regarded it as practically a certainty that some day we would put on weight, but now we take a look at chaps like W. H. (Bill) Richardson and Charley Walker, and console ourself with the thought that quality after all is much more important than quantity.

The arguments and discussions on certain horticultural subjects between Prof. E. L. Lord and this writer have become so well known that when recently we sat at a table together and failed to have a falling out our audience yawned for lack of interest, utterly disappointed.

That is the second time recently that this surprising thing has happened. Prof. Lord stopped us and wanted us to go with him to take a look at George Marsh's Bumby Grove property near Orlando which he had been treating liberally with lime. We paused, preparatory to beginning to argufy, and then Dr. Lord said something with which we found ourself in thorough agreement. Carelessly we said so. Then we both paused speechless for a long time, utterly flabbergasted. This thing of finding ourselves in agreement was so unexpected as to produce vocal paralysis, a serious symptom with either one of us. Thinking these occurrences over since, we are puzzled to account for them, unless it be that with the passage of time the Lord person is becoming more intelligent and less stubborn.

SOME PLANT COLLECTING EXPERIENCES

(Continued from page 14)

obtained and planted in a small pond closer home, where they could not get off and get lost.

These are just a few of the experiences. Many of the trips are relatively unexciting. Venomous snakes, so greatly feared by the layman, have been encountered. Much greater are the dangers of getting lost on unfamiliar woods trails far from the highway, getting the car stuck in mud holes on otherwise interesting roads through swamps, not to mention the minor excitements occasioned by wasps' nests, poison ivy and irate owners who object to trespassers.

All of these annoyances are insignificant compared to the fascination of hunting perfect specimens of Florida's plants. Our rich flora includes many valuable elements from crude drugs to pasture grasses, from rare ornamentals to forests of timber trees. For a century and a half botanists have explored and described Florida plants and the end is not yet.

Want Ads.

THOUSANDS of Rough Lemon Seedings, six to twenty inches high. $1.50 per hundred; $12.50 per thousand; ten thousand or more at $10.00 per thousand. Strong field grown plants. INDIAN ROCK NURSERIES, Largo, Florida.

STANDARD varieties of citrus trees including Persian limes and Perrine lemons at reasonable prices. Ward's Nursery, Avon Park, Fla.

Hamlins, Valencias and Lue Gim Gongs for fall planting. All on Cleopatra root. Zellwood Nurseries, Zellwood, Fla.

THRIFTY TREES and budwood from record performance Perrine Lemon parents. Persian Lime and other citrus varieties. DeSoto Nurseries, DeSoto City, Fla.

CAUSERIENCE LEPIDOFLOIA—(So-called Brazilian oak), resembles Australian pine. Grand for wind-breaks. Cold resistant. Beautiful. Send for sample of foliage. $6.00 per 100. S. S. Matthews, Homestead, Fla.

CHOICE Sour Orange Seedlings for fall planting, very desirable stock. S. G. Coburn, Dade City, Florida.

FOR SALE: Several desirable bearing grapefruit and orange groves, in good condition, at extremely low prices. For information write H. C. Case, Box 87, Fort Myers, Fla.

"EVERY TRACTOR OWNER NEEDS IRVING'S 60 page 1937 tractor replacement parts catalog. Absolutely free. Thousands parts, all makes, tremendous price savings. Irving's Tractor Lug Co., 109 Knoxville Road, Galesburg, Illinois.

HARDIN'S SPERRYOLA Lemon, a profitable adapted commercial variety for all sections. Hardy, prolific grower and producer. Limited number choice trees. Hardin Nurseries, Box 63, Lakeland, Fla.

CITRUS NURSERY TREES, standard and new varieties on Cleopatra and Sour. Priced from $0c up. Grand Island Nurseries, Eustis, Fla.

SEED—Rough lemon, sour orange, cleopatra. New crop from type true parent trees. Also thrifty seedlings. DeSoto Nurseries, DeSoto City, Florida.

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Horticultural Protection Service In 1937-38

E. S. ELLISON
FEDERAL-STATE HORTICULTURAL PROTECTION SERVICE

Two years ago the organization of the Horticultural Protection Service was begun in Florida. Appropriations for this service were provided by the U. S. Department of Agriculture, Weather Bureau and the State of Florida through the Agricultural Experiment Stations of the University. These funds permitted the coverage of important citrus and truck planting in the central portion of the Peninsula, extending from Lake county to the lower end of the Ridge section and immediately westward to the Gulf coast. The initial service in this area was so well received that upon demands of growers for this service in sections that previously could not be covered the Federal and State governments provided additional funds. Beginning November 1, 1937 all of the important agricultural sections on the Florida Peninsula will be given service exactly similar to that we were previously able to give only to the central citrus belt. This more than doubles the extent of the service within the space of two years and indicates a strong interest upon the part of Florida growers in the matter of frost and frost protection.

Four new field districts will be added this year and four new men technically trained in frost pjrotection will be assigned to cover them. Field headquarters will be established at Gainesville, DeLand, Winter Haven, Belle Glade and Homestead in addition to the field districts already operating from headquarters at Bradenton, Wauchula, Lakeland, and Orlando. These field men will establish the network of temperature stations used in the work of temperature survey now being conducted. These field men also will be available for such technical services in the matter of frost protection as may be desired locally.

With the enlargement of the frost service and the placing of a large number of new forecast stations in Peninsula districts, a radical change in the matter of preparing the official frost warnings for distribution has been made. The Florida Peninsula has been divided into ten climatic zones. Each of these frost districts will be considered separately when the forecasts are made and the forecaster will have an opportunity to specify the local weather and temperature conditions expected to prevail in each of these districts. There is so much variation in frost and weather conditions over the Florida Pener the whole area could not be made insula that a single forecast to cover the whole area could not be made

(Continued on page 15)

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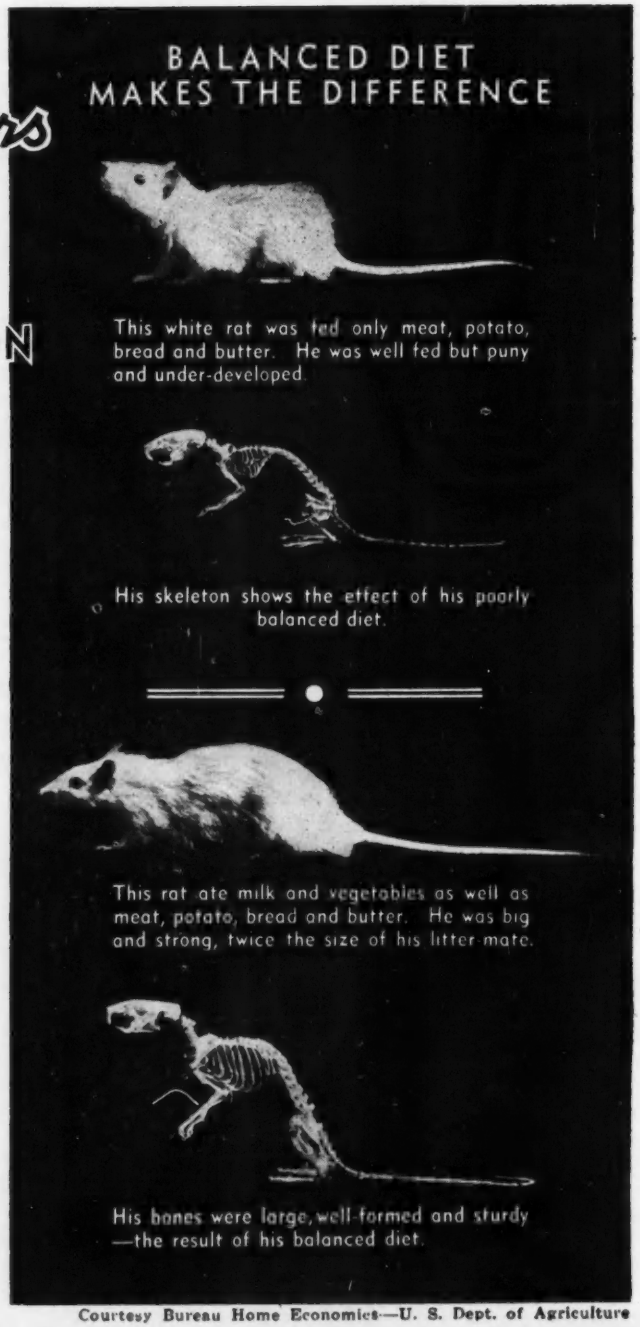
Control methods for dietary deficiencies and insect pests are discussed in our new fall citrus booklet written by Bayard F. Floyd, horticulturist, and Dr. R. L. Miller, entomologist. This booklet is free. Write for it.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His skeleton shows the effect of his poorly balanced diet.
This rat ate milk and vegetables as well as meat, potato, bread and butter. He was big and strong, twice the size of his litter-mate.
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